

Fig. 1

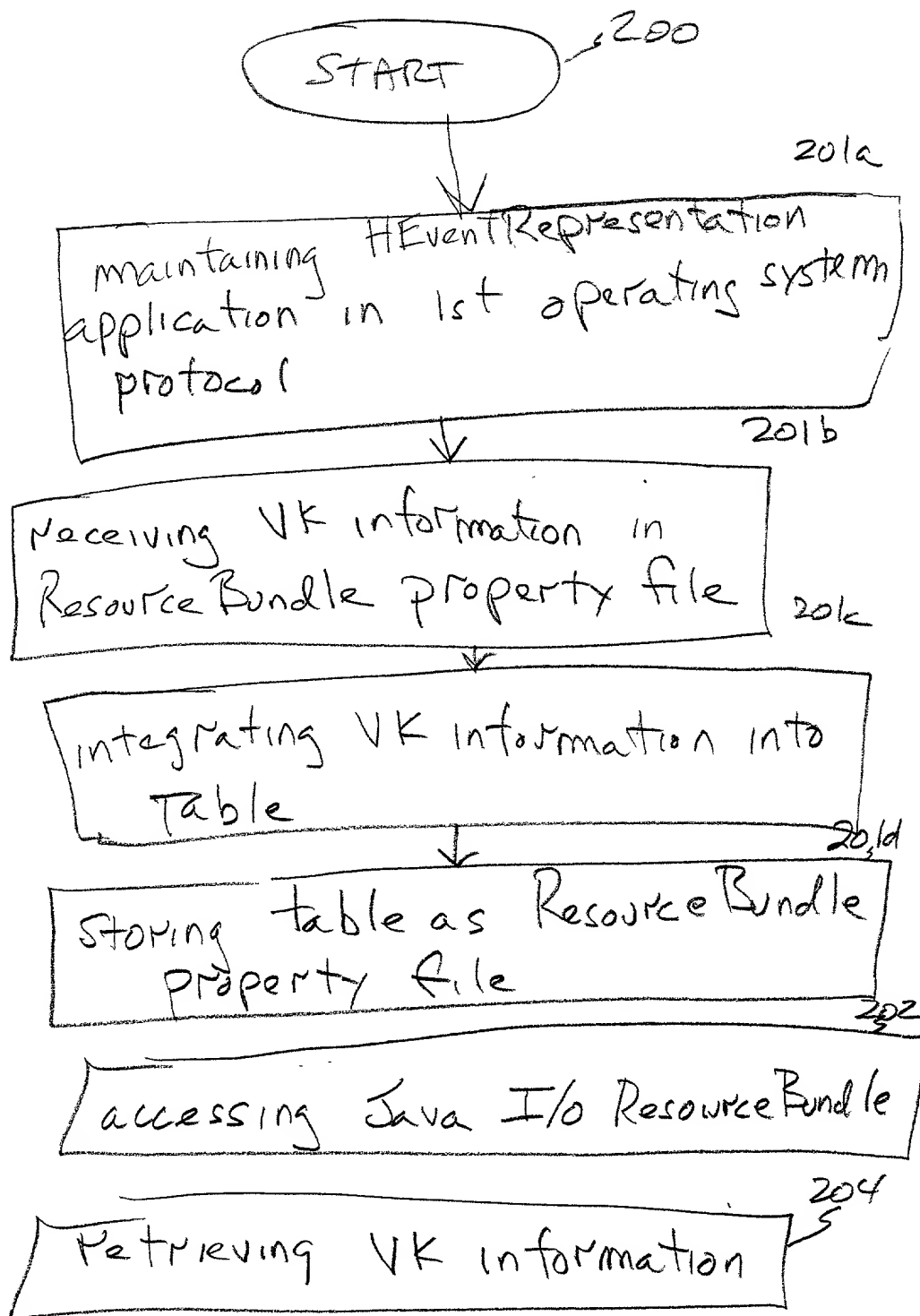


Fig. 2

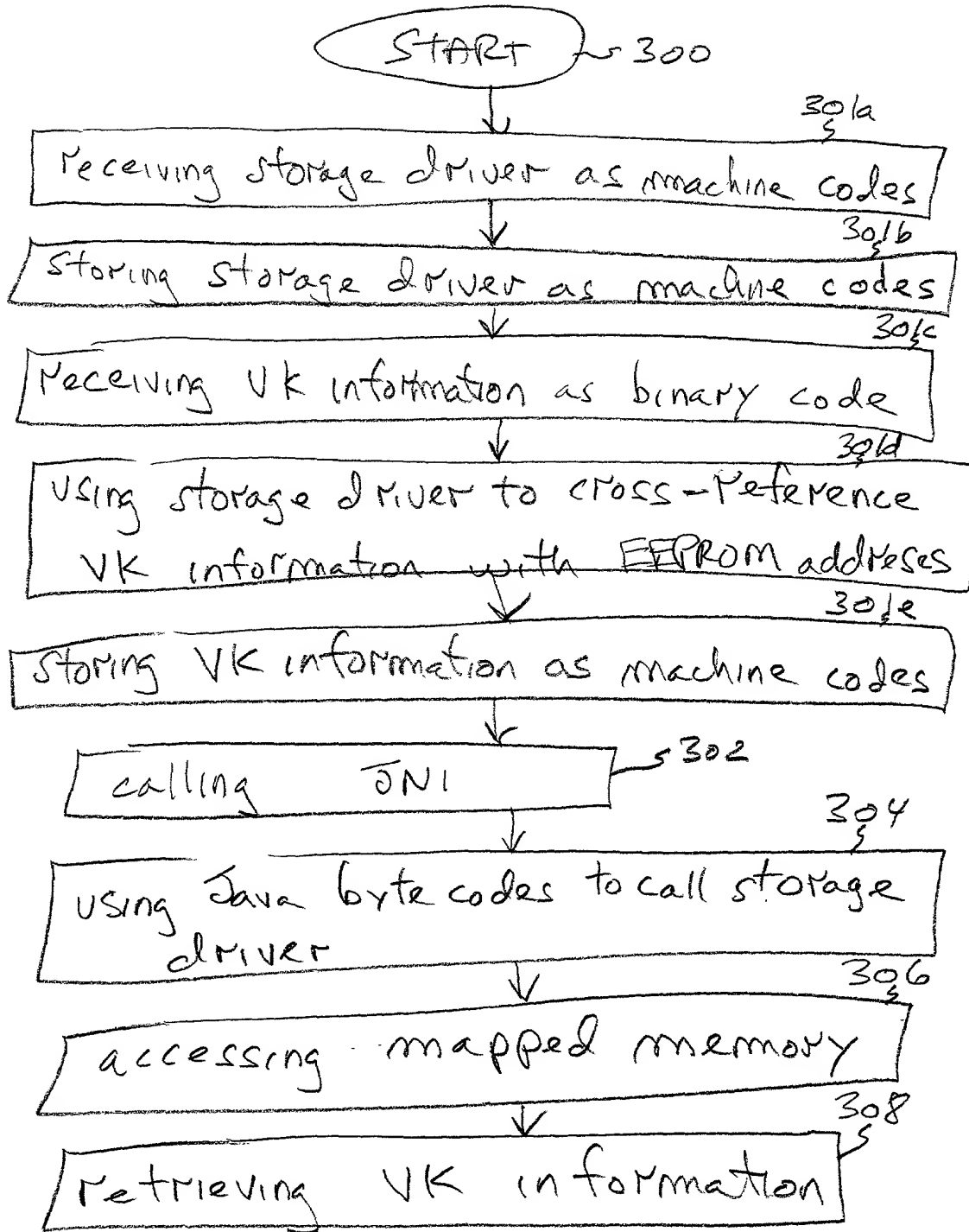


Fig. 3



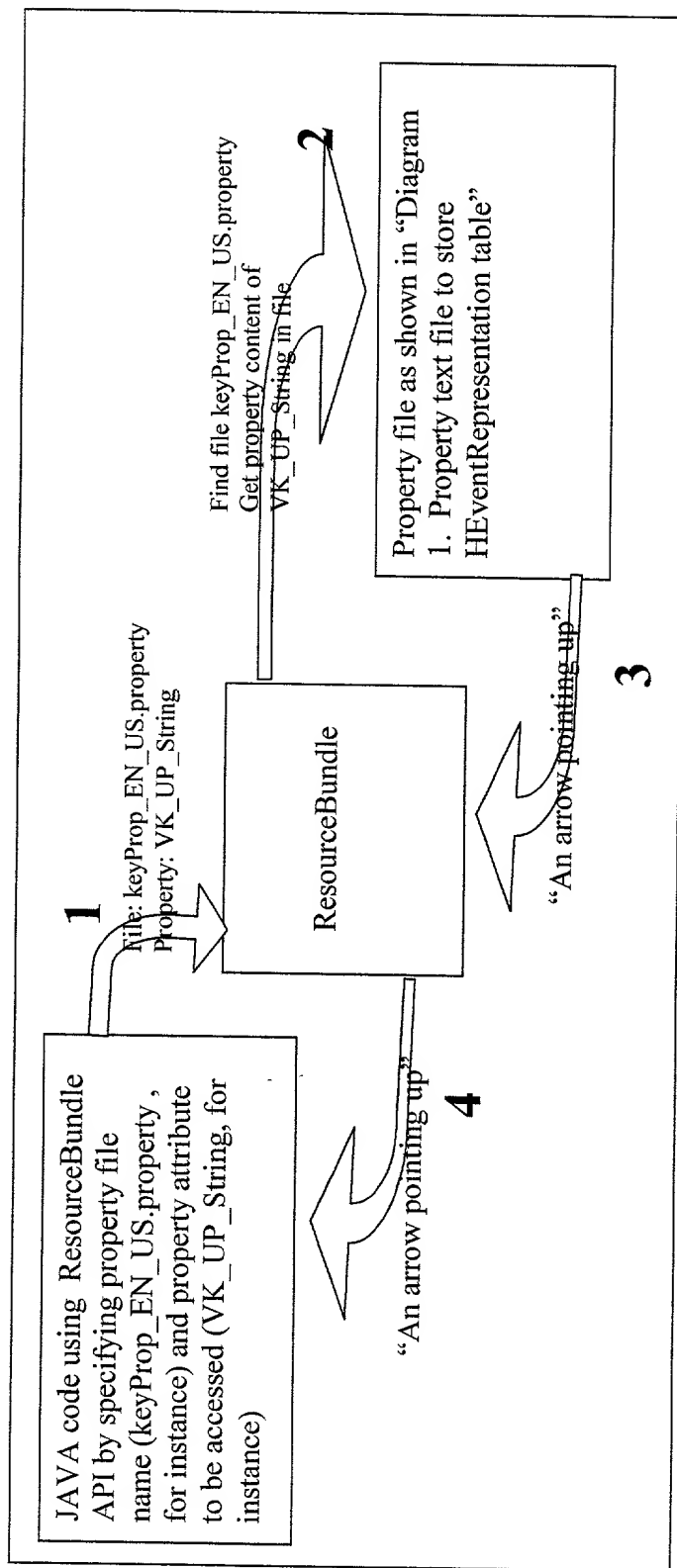


Fig. 4b

```
String[] eventRepresentationData = {
    VK_GO_TO_START, new Color(r, g, b), "⏮", "start.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_REWIND, new Color(r, g, b), "⏮", "rewind.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_STOP, new Color(r, g, b), "STOP", "stop.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_PAUSE, new Color(r, g, b), "⏸", "pause.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_PLAY, new Color(r, g, b), "▶", "play.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_FAST_FWD, new Color(r, g, b), "⏭", "fastfwd.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_GO_TO_END, new Color(r, g, b), "⏭", "end.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_TRACK_PREV, new Color(r, g, b), "⏮", "prevtrack.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_TRACK_NEXT, new Color(r, g, b), "⏭", "nexttrack1.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_RECORD, new Color(r, g, b), "O", "record.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_EJECT_TOGGLE, new Color(r, g, b), "EJECT", "eject.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_VOLUME_UP, new Color(r, g, b), "VOL+", "volup.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_VOLUME_DOWN, new Color(r, g, b), "VOL-", "voldown.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_UP, new Color(r, g, b), "▲", "up.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_DOWN, new Color(r, g, b), "▼", "down.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_LEFT, new Color(r, g, b), "◀", "left.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_RIGHT, new Color(r, g, b), "▶", "right.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
    VK_GO_TO_POWER, new Color(r, g, b), "0/1", "nght.png", ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL,
};
```

Fig. 5 Text array of key event representation

```

package com.sharplabs.havi.util;

import java.awt.Color;

public static class EventRepresentationData {
    static class VK_GO_TO_START {
        static final int code = VK_GO_TO_START;
        static final Color c = new Color(0, 0, 0);
        static final String s = "<<";
        static final String imgFile = "start.png";
        static final int type = ER_TYPE_NOT_SUPPORTED | ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL;
    }

    static class VK_REWIND {
        static final int code = VK_REWIND;
        static final Color c = new Color(0, 0, 0);
        static final String s = "<<";
        static final String imgFile = "rewind.png";
        static final int type = ER_TYPE_NOT_SUPPORTED | ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL;
    }

    static class VK_STOP {
        static final int code = VK_STOP;
        static final Color c = new Color(0, 0, 0);
        static final String s = "stop";
        static final String imgFile = "stop.png";
        static final int type = ER_TYPE_NOT_SUPPORTED | ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL;
    }

    static class VK_PAUSE {
        static final int code = VK_PAUSE;
        static final Color c = new Color(0, 0, 0);
        static final String s = "|";
        static final String imgFile = "pause.png";
        static final int type = ER_TYPE_NOT_SUPPORTED | ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL;
    }

    static class VK_PLAY {
        static final int code = VK_PLAY;
        static final Color c = new Color(0, 0, 0);
        static final String s = ">>";
        static final String imgFile = "play.png";
        static final int type = ER_TYPE_NOT_SUPPORTED | ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL;
    }

    static class VK_FAST_FWD {
        static final int code = VK_FAST_FWD;
        static final Color c = new Color(0, 0, 0);
        static final String s = ">>";
        static final String imgFile = "fast_fwd.png";
        static final int type = ER_TYPE_NOT_SUPPORTED | ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL;
    }

    static class VK_GO_TO_END {
        static final int code = VK_GO_TO_END;
        static final Color c = new Color(0, 0, 0);
        static final String s = ">>";
        static final String imgFile = "end.png";
        static final int type = ER_TYPE_NOT_SUPPORTED | ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL;
    }

    static class VK_TRACK_PREV {
        static final int code = VK_TRACK_PREV;
        static final Color c = new Color(0, 0, 0);
        static final String s = "<";
        static final String imgFile = "prevtrack.png";
        static final int type = ER_TYPE_NOT_SUPPORTED | ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL;
    }

    static class VK_TRACK_NEXT {
        static final int code = VK_TRACK_NEXT;
        static final Color c = new Color(0, 0, 0);
        static final String s = ">";
        static final String imgFile = "nexttrack.png";
        static final int type = ER_TYPE_NOT_SUPPORTED | ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL;
    }

    static class VK_RECORD {
        static final int code = VK_RECORD;
        static final Color c = new Color(0, 0, 0);
        static final String s = "REC";
        static final String imgFile = "record.png";
        static final int type = ER_TYPE_NOT_SUPPORTED | ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL;
    }

    static class VK_EJECT_TOGGLE {
        static final int code = VK_EJECT_TOGGLE;
        static final Color c = new Color(0, 0, 0);
        static final String s = "EJECT";
        static final String imgFile = "eject.png";
        static final int type = ER_TYPE_NOT_SUPPORTED | ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL;
    }

    static class VK_VOLUME_UP {
        static final int code = VK_VOLUME_UP;
        static final Color c = new Color(0, 0, 0);
        static final String s = "VOL+";
        static final String imgFile = "volumeup.png";
        static final int type = ER_TYPE_NOT_SUPPORTED | ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL;
    }

    static class VK_VOLUME_DOWN {
        static final int code = VK_VOLUME_DOWN;
        static final Color c = new Color(0, 0, 0);
        static final String s = "VOL-";
        static final String imgFile = "volumedown.png";
        static final int type = ER_TYPE_NOT_SUPPORTED | ER_TYPE_STRING | ER_TYPE_COLOR | ER_TYPE_SYMBOL;
    }

    static class VK_UP {

```

Fig. 6 Static class of event representation

Applications

HAVI L2 GUI API

Table storage in JAR file in  
the model of either

- static class
- data array

(Storage media, e.g., ROM)

Via java virtual machine operation

Fig. 7 JVM Access Model

Applications

HAVi L2 GUI API

Java.io package  
(ResourceBundle class)

Table storage in text-based property  
file model.  
(Storage media, e.g., flash memory,  
hard disk.)

Via java.io file system

Fig. 8 Java I/O Accessing model

Applications

HAVILL2 GUI API

JNI calls to storage device driver  
(each event code, color, string,  
symbol representation maybe in  
binary format)

Table storage in mapped memory  
(Storage media, e.g., EEPROM)

Via JNI / device drivers

Fig. 9 JNI/Storage driver Accessing Model

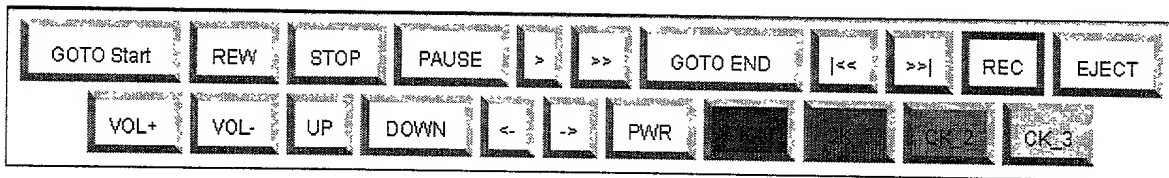


Fig. 10 HEventRepresentation using String, Color attribute data

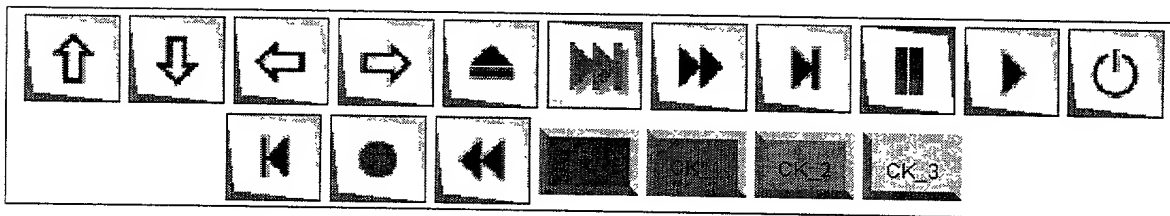


Fig. 11 HEventRepresentation using Symbol, String, and Color attribute data